

**OCONEE COUNTY PROCUREMENT OFFICE
415 S. PINE STREET
WALHALLA, SC 29691**

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ADDENDUM NO. 3

BID NO. 19-04

**New Electrical Service for Mobile Mine Duty Crushing Plant
for Oconee County Rock Quarry**

Bid Date:

Thursday, September 19, 2019 @ 2:00PM

Last Day for questions: Friday, September 9, 2019 @ 5:00pm

Please make the following changes:

Engineered drawings provided by Burdette Engineering are attached to this addendum.

Delete: Item C under Required Documentation on Page 15

~~C. Electrical Wiring Diagrams~~

~~Two (2) electrical wiring diagrams, both electronically and written, shall be provided in paper format at time of completion~~

Page 15, Required Documentation, item D

D. A preliminary schedule to complete the required work based upon an estimated start date of ~~July 29, 2019~~ **September 30, 2019**. Also address undersigned's overall workload during this period and availability to meet stated deadline.

Delete: Item B under Specifications, Page 15

~~B. A proposed drawing and electrical specifications which shows the expected construction of the electrical upgrade is Attachment # 2 on Page # 27.~~

Replace with: See Construction Drawings provided in Addendum No. 3

END ADDENDUM NO. 2

Dated: September 3, 2019

Please acknowledge receipt of Addendum by signing and attaching to your bid.

BY: _____ DATE: _____
(Contractor)

(Signature) (Title of Signing Officer)

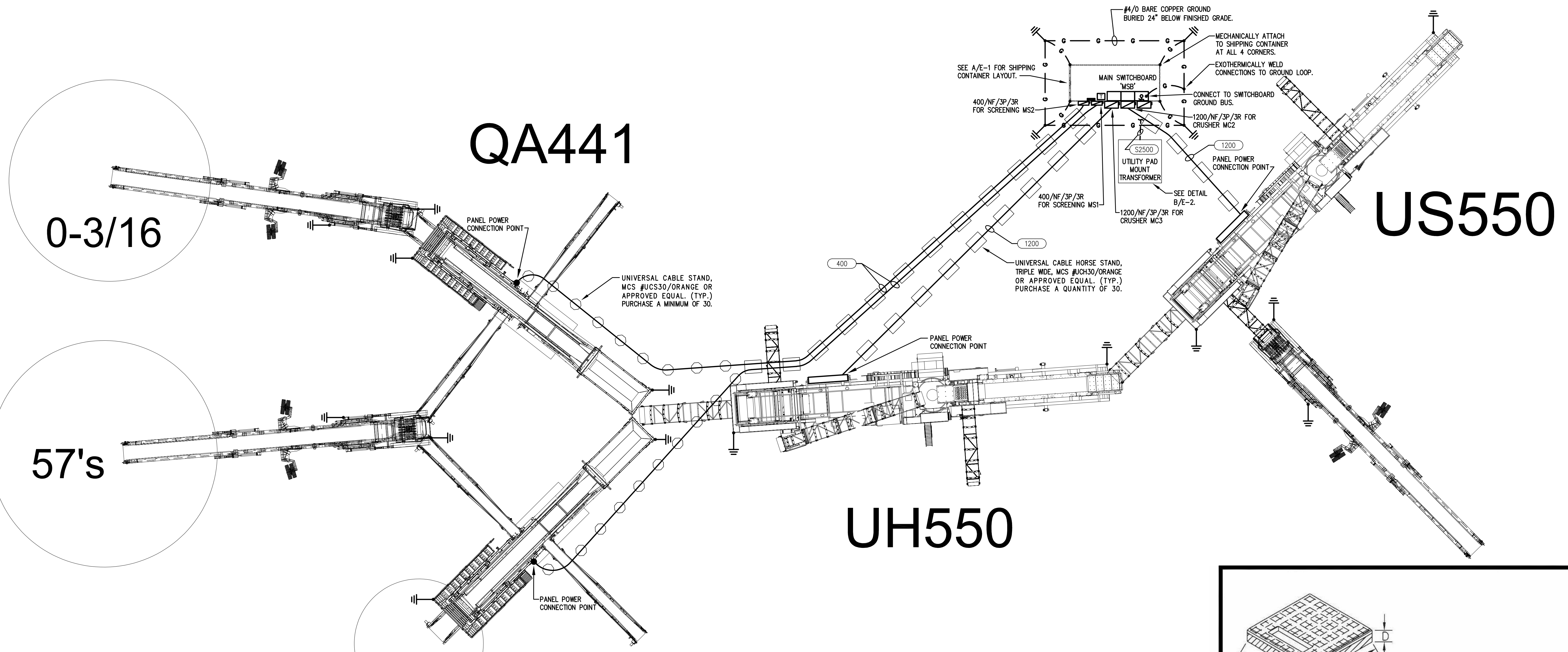


BURDETTE ENGINEERING
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 Greenville, SC 29607
 BEI JOB NO. 19081
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PROJECT NO.	DATE	BY	REVISION
19081	08/16/19		

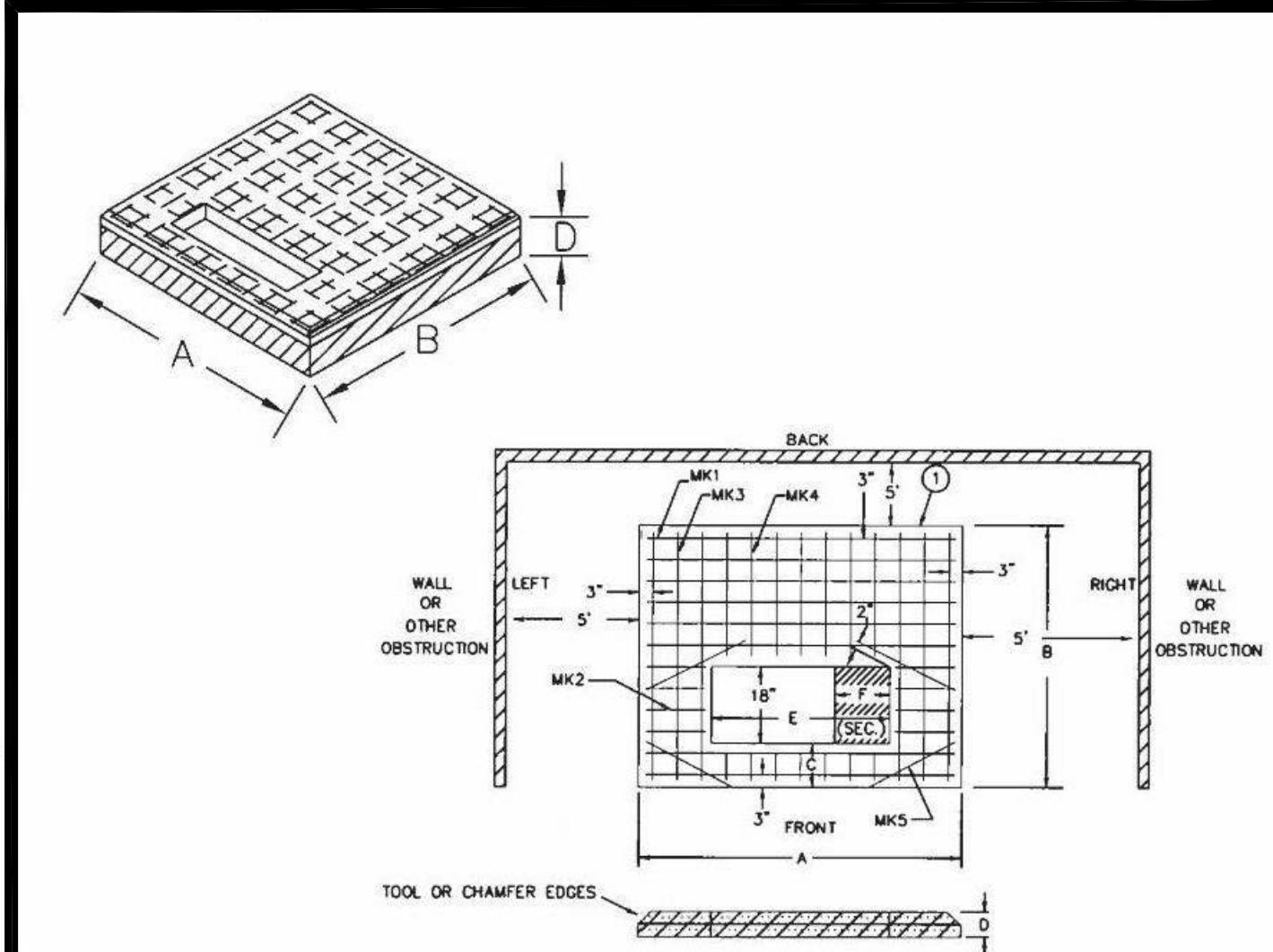
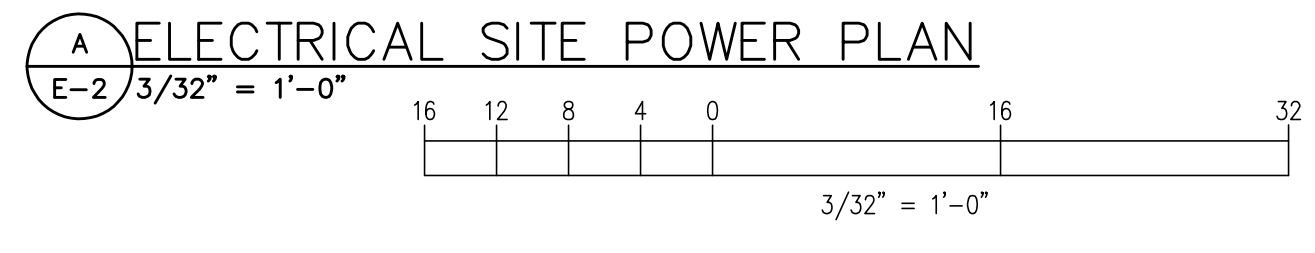
**ELECTRICAL SERVICE FOR
 OCONEE COUNTY
 MOBILE MINE CRUSHING PLANT
 WALHALLA, SC**

**SHEET NUMBER
 E-2
 2 OF 3 SHEETS**



TAG	WIRE AND CONDUIT
400	3/C-500KCMIL WITH #2/0G TYPE G-GC, ANACONDA # 13354.646500
1200	3 SETS [3/C-500KCMIL WITH #2/0G TYPE G-GC, ANACONDA # 13354.646500]
S2500	6 [4 #600KCMIL; 4"C]

- NOTES:**
- POWER CABLES ENERGIZED TO POTENTIALS IN EXCESS OF 150 VOLTS, PHASE-TO-GROUND, SHALL NOT BE MOVED WITH EQUIPMENT UNLESS SLEDS OR SLINGS, INSULATED FROM SUCH EQUIPMENT ARE USED. WHEN SUCH ENERGIZED CABLES ARE MOVED MANUALLY, INSULATED HOOKS, TONGS, ROPES, OR SLINGS SHALL BE USED UNLESS SUITABLE PROTECTION FOR PERSONS IS PROVIDED BY OTHER MEANS. THIS DOES NOT PROHIBIT PULLING OR DRAGGING OF CABLE BY THE EQUIPMENT IT POWERS WHEN THE CABLE IS PHYSICALLY ATTACHED TO THE EQUIPMENT BY SUITABLE MECHANICAL DEVICES, AND THE CABLE IS INSULATED FROM THE EQUIPMENT.
 - CONTINUITY AND RESISTANCE OF GROUNDING SYSTEMS SHALL BE TESTED IMMEDIATELY AFTER INSTALLATION, REPAIR, AND MODIFICATION; AND ANNUALLY THEREAFTER. A RECORD OF THE RESISTANCE MEASURED DURING THE MOST RECENT TESTS SHALL BE AVAILABLE AT ALL TIMES.
 - AT BOTH ENDS OF TRAILING CABLES, PROVIDE STRAIN RELIEF TO PROTECT THE CABLE FROM DAMAGE AND TO PREVENT STRAIN ON THE ELECTRICAL CONNECTIONS.
 - SURPLUS TRAILING CABLES SHALL BE STORED IN CABLE BOATS, STORED ON REELS MOUNTED ON THE EQUIPMENT, OR OTHERWISE PROTECTED FROM MECHANICAL DAMAGE.



PAD	TRANSFORMER KVA	DIMENSIONS IN INCHES						REINFORCING BARS				
		A	B	C	D	E	F	MK1	MK2	MK3	MK4	MK5
#1	45, 75, 112.5	80	80	10	B	50	20	7 #4	5 #4	5 #4	5 #4	4 #4
	150, 225	60	80	10	B	50	20	7 #4	5 #4	5 #4	5 #4	4 #4
	300, 500	96	96	10	B	60	24	9 #4	7 #4	7 #4	7 #4	4 #4
#2	750-2000	108	108	12	B	60	24	12 #4	9 #4	9 #4	7 #4	4 #4
	2500	120	120	12	B	60	24	14 #4	11 #4	11 #4	9 #4	4 #4

- NOTES:**
- CONCRETE TESTING: 4000 POUNDS PER SQUARE INCH. 4% TO BE ENCASED AIR. 3/4" MAXIMUM SIZE AGGREGATE WITH FIBER REINFORCEMENT.
 - REINFORCING STEEL: ASTM-A615 GRADE 60. PLACE APPROX. 6" O.C. EACH WAY AND SECURELY TIED TOGETHER.
 - MINIMUM CONCRETE COVER OVER REINFORCING STEEL: 2 INCHES UNLESS NOTED.
 - WOOD FORM FRESH, LEAVING NO IMPRESSIONS.
 - THE AREA IN FRONT OF THE TRANSFORMER PAD MUST REMAIN OPEN AND PROVIDE MECHANICAL ACCESS TO EQUIPMENT INSTALLED.
 - CONTACT ON SECONDARY SIDE SHOULD BE EVEN WITH CONCRETE PAD.

PAD MOUNTED TRANSFORMER SPECIFICATIONS FOR SUPPORTING CONCRETE PADS	
DATE:	REVISIONS
JANUARY, 1992	MEJ 3/2/00 MEJ 11/13/00
	MEJ 10/8/02
	UNIT
	UM1-6C

**UTILITY TRANSFORMER CONCRETE PAD DETAIL
 NOT TO SCALE**

SECTION 260500 – GENERAL PROVISIONS

PART 1 – GENERAL

1.1 RELATED SECTIONS

A. The provisions of all other sections of Division 1 of these Specifications shall govern the work under this Division or Section the same as if incorporated herein.

1.2 SCOPE

A. The Contractor shall provide and install complete electrical systems including all conductors, raceways, fittings, protective devices, wiring devices, fixtures, supports, and all miscellaneous hardware necessary. All of the above equipment shall be completely installed and left in proper operating condition. All electrically powered equipment whether furnished by others or by the Contractor shall be wired by the Contractor.

B. Complete Power distribution and utilization system shall be installed, including panelboards, utilization devices and equipment as required and indicated on drawings.

C. The Contractor shall furnish and install power, wiring and/or disconnects as shown on drawings for wiring systems for mechanical systems specified in other drawings and specification sections for this project. Temperature control wiring, equipment control and interlock wiring are not included in this division unless specifically noted in these specifications or shown on the plans. All motor disconnects, starters, combination motor controllers and motor control centers shall be furnished under this division of specifications unless noted otherwise.

1.3 REQUIREMENTS

A. Field verification of scale on electrical plans is directed since actual locations, distances and levels will be governed by actual field conditions. The contractor shall investigate existing electrical system and verify circuits shown are available. Before final payment, provide the owner with redlined copy of all changes made during the project and labeled "FIELD RECORD DRAWINGS" with date, company and job superintendent. Provide all panels affected by the project with an updated, typed panel schedules reflecting all changes made.

B. In case of conflicts or discrepancies between plans, plans and specifications and/or actual field conditions, Contractor shall notify the Engineer before work is continued. Coordinate with other trades to avoid conflicts.

C. Permits, Inspections and Tests – The Contractor shall procure and pay for all permits, fees, inspections, and licenses required. Perform all tests to ensure all systems are in good operating condition.

D. Review of Material; Specific reference in the specification to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, with or without the words "or equal", shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition.

E. Bidders shall base bids on the material specified or on equals receiving approval 10 days prior to Bid Opening. Any increase in the cost of work resulting from substitution of any product specified is part of this contract and shall be accomplished in an approved manner at no extra cost to the Owner.

F. Substitutions. No substitution will be considered unless written request for approval has been received by the Engineer at least 10 days prior to the date of receipt of bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or other Work that incorporation of the substitute would require shall be included; failure to do so does not alleviate the Contractor of his responsibility to make any and all necessary changes required for installation of the approved substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The Engineer's decision of approval or disapproval of a proposed substitution shall be final.

G. All materials shall be new and of current manufacturer. Where more than one of a type of device is used, all shall be by the same manufacturer. All materials shall conform to the grade, quality and standards of those specified.

H. Shop drawings shall be submitted in accordance with the General Conditions. Forward all shop drawings at one time. Each item shall bear project name and identifying symbol from plans. Shop Drawings required are as follows:

1. Switchboards
2. Panelboards
3. Transformers
4. Disconnect Switches
5. Wiring/Cables
6. Cable Supports
7. Container Insulation

I. Interferences – The drawings are generally diagrammatic in nature, and accordingly the Contractor shall coordinate his work with that of all other trades to avoid interferences. The Contractor shall examine the complete set of drawings and specifications for the job before installation of electrical work, coordinating locations and routings with other trades to avoid interferences. Work installed by the Contractor which does interfere with another trade shall be removed and reinstalled at the Contractor's expense when directed by the Architect.

J. Workmanship shall be of the highest quality and all work shall be done by workmen skilled in the trades involved.

K. The Contractor shall guarantee all work under this contract for one year and shall be responsible for the maintenance of all electrical equipment furnished and installed under this contract for a period of one year from the date of substantial completion.

PART 2 – PRODUCTS
NOT USED

PART 3 – EXECUTION

3.1 APPLICABLE CODES AND STANDARDS

Note: The materials and installation shall conform to the minimum requirements and latest outstanding issues and revisions of the following codes, standards, and regulations wherein they apply:

- NFPA No. 70, National Electrical Code, (2014 edition).
- IBC (2015), IECC (2009), IFC (2015).
- American National Standard, National Electrical Safety Code, (2012).
- Applicable Publications of NEMA, ANSI, IEEE and IPCEA.
- Underwriter's Laboratories, Inc. Standards
- City, State and Local Codes and Regulations having jurisdiction.
- OSHA requirements.
- ADA requirements.

END OF SECTION 260500

SECTION 260501 – BASIC MATERIALS

PART 1 – GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 SCOPE

A. Contractor Furnished. Unless otherwise noted on the drawings, equipment list, or specifications, the Contractor shall furnish and install all materials, devices, and apparatus necessary for the complete electrical system. All materials and equipment shall be of types and manufacturer specified wherever practical. Should materials or equipment so specified

be obtainable, the Contractor shall submit the description and manufacturer's literature, reason for the substitution request and shall secure the approval of the Engineers before substitution of other material or equipment. This specification establishes performance requirements and the quality of equipment acceptable for use and shall in no way be construed to limit procurement from other manufacturers.

B. Equal or Equivalent. The term "or equal" and similar terms as used on the drawings or specifications shall be interpreted to mean "equal or equivalent" in the opinion of the Engineers.

C. Manufacturer's Prints. Where the Contractor furnishes equipment other than standard construction items, he shall furnish manufacturer's prints of all such equipment to the Engineers.

D. U.L. Listing. All equipment and materials shall be new and conform to the requirements of this specification. All equipment and materials shall be listed by the Underwriter's Laboratories, Inc., and shall bear their label whenever standards have been established and label service is regularly furnished. All equipment and materials shall be of the best grade of their respective kind for the purpose.

PART 2 – PRODUCTS AND EXECUTION

2.1 PANELBOARDS (WHERE INDICATED AS NEW)

A. Contractor Furnished. The contractor shall furnish all lighting, service, and power distribution panelboards required. All panelboards shall be of deadfront construction and shall incorporate all switching and protective devices of the type, quantity, number of poles, rating and type specified or shown on the drawings. The drawings and schedules indicate the ampere rating of mains, main breaker or disconnect, main lugs, voltage rating, phases, neutral and type of devices and enclosures. Enclosures for panelboards may be flush or surface type as designated on the drawings.

B. Doors. Hinged doors covering all switching device handles shall be included in all panel trims, except that panelboards having individual metal clad externally operable deadfront units may be supplied without such doors. Trims for flush panels shall overlap the box by at least 3/4" all around. Surface trims shall have the same width and height as the box. Trims shall be mountable by a screw-driver without the need for special tools.

C. Directory. A directory holder with glass or heavy plastic plate and metal frame shall be mounted inside of each door with a neatly typed directory properly identifying each circuit as shown on panel schedule drawings.

D. Nameplate. The contractor shall furnish and install an engraved, laminated plastic nameplate on the trim. The nameplate shall identify the panel by power source designation, panel designation, voltage rating and phase. Nameplate shall be black engraved letters on white background.

E. Bus Bars. All bus bars and other conductive parts shall be copper and sized in accordance with Underwriter's Laboratories standards. Full size insulated neutral bars shall be included. Bussing shall be brooded equal to or greater than the highest rated practice governing short circuit stresses in panelboards. Phase bussing shall be full height without reduction. Cross connectors shall be copper.

F. Neutral Bus. Neutral bussing on 3-phase panels shall be copper and have a suitable lug for each outgoing feeder requiring a neutral connection.

G. Ground Bus. All panels shall be furnished with a bare equipment copper ground bus.

H. Circuit Numbering. Panelboard circuit numbering shall be such that starting at the top, odd numbers shall be used in sequence down the left-hand side and even numbers shall be used in sequence down the right-hand side.

I. Terminals. Terminals for feeder conductors to the panelboard mains and neutral shall be U.L. listed as suitable for type of conductor specified. Terminals for branch circuit wiring, both breaker and neutral, shall be U.L. listed as suitable for the type of conductor specified.

J. 277/480V Panels. All power panels rated 277/480 volt, shall be equal to Square D Company, Type N-List. All lighting/service panels rated 277/480 volt, shall be equal to Square D Company, Type NF equipped with bolt-on branch breakers the type and rating specified on the drawings.

K. 120/208V Panels. All lighting/service panels rated 120/208 volt, shall be equal to Square D Company, Type NQ equipped with bolt-on branch breakers of the type and rating specified on the drawings.

L. Panels and Panelboards are designed around Square D equipment. Acceptable alternate manufacturers are Cutler-Hammer and Siemens. All alternate or substitution requests shall meet all performance requirements of specified equipment, as well as space and dimension requirements noted on drawings.

2.2 CIRCUIT BREAKERS

A. Contractor Furnished. The contractor will provide breakers unless specifically designated to be "Owner Furnished" on the drawings, equipment list, or within the specifications.

B. As Specified. Breakers shall be of the type, rating, number of poles, size, and interrupting capacity, specified or required for the environment, location, application, and load served.

C. Molded Case Circuit Breakers. Molded case circuit breakers shall be circuit interrupting devices which will operate both manually for normal switching functions and automatically under overload and short circuit conditions. Circuit breakers shall provide circuit protection when applied within rating.

D. Rating. The molded case circuit breakers shall be rated for fault duty as specified on the plans. Series ratings are not allowed. The contractor shall verify available fault current with the Utility Company for the actual installation and forward to the Engineer.

2.3 SAFETY SWITCHES

A. Contractor Furnished. The contractor shall provide all safety disconnect switches required. The switches shall be of the type, voltage, amperage, and horsepower rating, number of poles, fusable or nonfusable, as specified or required for the environment, location, application, and load served.

B. Description. All safety switches shall be NEMA premium heavy duty, horsepower rated, industrial type and shall be Underwriters' Laboratories listed. Fusible switches shall be complete with fuses of the type and rating specified (refer to paragraph "Fuses") and as indicated on the drawings or within these specifications. All switches shall have switch blades that are fully visible in the OFF position when the door is open and shall be of dead front construction with arc suppressors. The mechanism shall be quick-make, quick-break type. The door shall be interlocked (defeatable type) with the handle or mechanism to prevent unauthorized opening of the door in ON position. Pad-locking provisions shall be provided for padlocking in the OFF position with one or more locks or lockable hasps. Grounded switches in a common enclosure shall be mounted in enclosure types specified elsewhere. Individually mounted switches shall be mounted in enclosures suitable for the location and environment as specified on the drawings.

C. Nameplate. All switches shall be provided with an engraved laminated phenolic nameplate showing the power source (Unit No. or other), and title of equipment served. Nameplates to be black letters on white background.

D. Manufacturer and Enclosures. All switches furnished shall have enclosures as specified on the drawings. Acceptable manufacturers shall be Square D, General Electric, Siemens, and Cutler-Hammer.

2.4 FUSES

A. Contractor Furnished. The contractor shall furnish and install fuses in all fusible devices and equipment that are furnished by the contractor.

B. Manufacturer and Listing. The following fuse types shall be used for the applications listed. The following are trade names of the Business Manufacturing Division, however, equivalent products by Chose Showmut Division shall be acceptable.

Application	Trade Names	Class	Voltage (Type)
Motors, Transformers & Miscellaneous Equipment 0-600 Amps	Fusetron	K-5	240 (FRN)
		K-5	600 (FRS)
Panelboard Feeders & Service Disconnects 0-600 Amps	Low Peak	RK-5	240 (LPN-R)
		RK-5	600 (LPS-R)
Panelboard Feeders & Service Disconnects 601-6000 Amps	HI-CAP	L	600 (KRP-C)

2.5 MISCELLANEOUS CONTROL DEVICES

A. Furnished by Others. Miscellaneous control devices such as duct switches, air flow switches, thermostats and temperature control devices, and similar equipment shall normally be furnished under another division. Any such device that is to be furnished under this division shall be specifically designated on the drawings.

B. Enclosures. All devices furnished shall be suitable for the control requirements and shall have voltage rating and adequate capacity for the application. They shall be housed in enclosures suitable for the location and environment as indicated on the drawings.

2.6 RECEPTACLES

A. Contractor Furnished. The contractor shall furnish and install all convenience (and power type) receptacles and outlets shown on the drawings. Suitable boxes, covers and matching plugs as specified shall be provided and the installation shall conform to typical details, drawings, and as described elsewhere in this specification. See electrical symbol drawings for additional descriptive data. Contractor shall install devices of the color and type specified on plans.

B. Single Manufacturer. Receptacles of similar usage and rating shall be those of a single manufacturer.

C. Usage and Manufacturer. General use and convenience outlets shall be as specified by symbol on the drawings and as listed on the symbols drawing.

D. Ground Fault Protection. Note that all convenience receptacles to be installed as ground fault interrupting type are so noted on drawings. All outlets located within 72" of sink or water source shall be GFCI type.

2.7 BOXES

A. Contractor Furnished. The contractor shall furnish and install all electrical boxes required for the proper installation of the electrical systems. Boxes shall be of the NEMA type suitable for the location. Boxes shall be installed as specified on the drawings and as described under "Wiring Methods", and other applicable sections of this specification for wiring devices such as switches, receptacles, and similar devices. In order to maintain fire ratings, boxes installed "back-to-back" in fire walls shall not be located in the same space between studs, but shall have a stud located between them.

B. Surface Mounted. Fixture, outlet, and switch boxes installed surface mounted shall only be installed where noted on the plans.

C. Pull Boxes. Pull boxes for interior, or outdoor exposed power wiring shall be provided where shown or required to facilitate the installation of the wiring. Pull boxes shall not be located in finished rooms and shall be accessible for maintenance use.

D. Exterior and Underground. For exterior exposed work, pull boxes shall be of NEMA 3R construction.

2.8 COVERS AND DEVICE PLATES

A. Contractor Furnished. The contractor shall furnish and install the appropriate cover on all boxes, conduit fittings, panels, cabinets, switches, receptacles, and similar wiring devices and other equipment that is Contractor furnished. Conduit outlet fitting covers shall be the type specified under "Conduit Fittings."

2.9 ENCLOSURES

A. Enclosures and housings for all Contractor furnished electrical equipment and devices shall be suitable for the location and environmental conditions and shall be of NEMA type as shown on symbol sheet drawing.

END OF SECTION 260501

SECTION 260526 – GROUNDING

PART 1 – GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this Section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 WORK INCLUDES

A. As Required By the NEC. In general, fixtures, outlets, the enclosing cases, mounting frames, etc., of all switches, circuit breakers, control panels, motors and any other electrically operated or electrical equipment, conduit, trays, and other raceways shall be effectively and permanently grounded with a separate copper grounding conductor of cross-section as required by the National Electrical Code and drawings. It shall be of capacity sufficient to insure continuity and continued effectiveness of the ground connections to carry fault currents. Ground conductors must be as short and straight as possible, protected from mechanical injury and if practicable without splice or joint. The grounding conductor shall be run from a ground established at the source of supply to the equipment to be grounded. Ground wires from below grade shall be protected by galvanized conduit and the conductor shall be bonded via a listed fitting to conduit sleeve on each end. All grounding conductors shall be copper.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

3.1 INSTALLATION

A. Power Conductors Supplying Equipment. A copper grounding conductor must be run inside the conduit or raceway, enclosing the power conductors supplying the equipment, or in case of a multi-conductor power cable, must be located within the sheath.

B. Connect at Source. Ground conductors in power cable or ground wire in conduits shall always be connected directly to station ground at the source end, and to motor frame or equipment enclosure and/or equipment ground bar.

C. System Neutral. The equipment grounding conductor in all circuits shall be connected to the frame and ground lug in the panelboards and not the neutral bus. Equipment ground connections to a system neutral are not permitted.

D. Fuses. In all cases of grounded circuits, fuses must be omitted from the grounded neutral conductor throughout the entire installation.

E. Equipment Frames. Frames of all electrical apparatus will be connected to the grounding system. Neutrals of service transformers shall be connected to the grounding system.

F. Metallic Raceways. All metallic conduits and wiring channels must be connected at each end to the grounding conductor with a good electrical contact.

G. Identification. The grounding conductor shall be stranded and covered with a green jacket.

H. In all cases the white wire should be used for the current-carrying neutral only and never as

a grounding conductor, or other purpose.

I. Ground Rods. Where specified on drawings, grounding connections to earth shall be made with 5/8" diameter (minimum) copper-clad steel exten-type ground rods a minimum of 8 feet long, or depth as indicated.

END OF SECTION 260526

SECTION 260539 – ELECTRICAL RACEWAYS

PART 1 – GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this Section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 SCOPE

A. Contractor Furnished. The contractor shall provide all conduit, fittings, and supports required and not otherwise shown on plans as furnished by others.

B. The types of electrical raceways required for the project include the following:

1. Flexible Metal Conduit
 2. Liquid-Tight Flexible Metal Conduit
 3. Rigid Galvanized Conduit
 4. PVC Rigid Conduit
- C. The minimum raceway size shall be as indicated on plans. If no indication is given on plans, then conduit shall be minimum 3/4".

D. Product Delivery, Storage, and Handling. Contractor is to provide color-coded end-cap thread protectors and handle conduit carefully to prevent damage. Store conduit inside whenever possible. When necessary to store outdoors, elevate well above grade and enclose with durable, watertight wrapping.

PART 2 – PRODUCTS

2.1 MATERIALS AND COMPONENTS

A. Flexible Metal Conduit. Galvanized single steel strip, flexible, interlocked.

B. Liquid-Tight Flexible Metal Conduit. Galvanized single steel strip, flexible, interlocked, double wrapped, with liquid-tight PVC jacket.

C. Rigid Galvanized Conduit. Rigid steel, hot-dipped galvanized conduit.

D. PVC Rigid Conduit. U.L. listed Schedule 40 heavy wall rigid conduit.

E. Conduit and duct accessories including straps, hangers, expansion and deflection fittings as recommended by conduit and duct manufacturers.

PART 3 – EXECUTION

3.1 APPLICATION

A. Flexible Metal Conduit. Connection of motors and for other electrical equipment where subject to movement and vibration and located in a dry, interior location. Flexible conduit is not to exceed 60" in length for any one application and shall be secured at each end and per code.

B. Liquid-tight Flexible Metal Conduit. Connection of motors and for other electrical equipment where subject to movement and vibration, and also subjected to one or more of the following conditions: Exterior location; moist or humid atmosphere where condensate can be expected to accumulate; corrosive atmosphere; subjected to water spray; subjected to dripping oil, grease or water. Flexible conduit is not to exceed 60" in length for any one application and shall be secured at each end and per code.

C. Rigid Galvanized. Where specified on plans for certain underground or exposed runs, or where stubbed up at floor level.

D. Rigid PVC. Where specified on plans for certain underground runs, UL approved Schedule 40 heavy wall rigid PVC conduit shall be used. Not to be stubbed up at floor level. All PVC underground runs shall transition to rigid galvanized before stubbing up through floor slab or grade.

3.2 INSTALLATION

A. Install conduit in accordance with NEC and National Electrical Contractors Association's "Standard of Installation", and with recognized industry practices. Where NECA and NEC standards differ, use the more stringent requirement.

B. Complete the installation of raceways before starting installation of wires.

C. Wherever possible, install horizontal raceway runs above water and steam piping.

D. Care shall be taken to keep the interior of conduits clean, and each conduit run shall be thoroughly cleaned and dried before any cable is pulled through.

E. Unless indicated otherwise on drawings, all exposed conduits shall be run parallel with or perpendicular to building structural members.

F. Conduits entering steel metal enclosures shall be made up with double locknut and insulating bushing. Locknut shall be of the type which will bite into the metal of the box.

G. Conduits entering threaded openings in equipment enclosures, boxes, etc., shall have at least five full threads engaged. In outdoor and underground locations, threaded joints shall be made up with a thin application of conducting joint compound. The inside of the fitting shall be thoroughly cleaned of any excess compound.

H. Power operated bending machines shall be used on conduits 1-1/4" and larger. Heating with torches will not be permitted.

I. All conduit runs shall be continuous from outlet to outlet with all joints and connections pulled tight to insure an electrically continuous and mechanically secure raceway system.

3.3 CONDUIT OPENINGS

A. Contractor's Responsibility. The Contractor shall be responsible for all sleeves and openings through walls and floors necessary for passage of electrical conduits and raceways. Where contractor must provide openings, he shall be responsible for the repair of these openings. Structural members and reinforcing shall not be cut, burned or damaged in any way. All openings in walls and floors, and under switchgear and panels where electrical cables and conduits are installed, shall be closed up by the Contractor to prevent dust, dirt and water from entering.

B. Sealing. The Contractor shall be responsible for sealing all wall and floor openings and all floor and wall sleeve openings utilized by the contractor whether furnished by Others or by the Contractor.

C. Sleeves and openings shall be sealed with materials that will withstand fire and heat to the same rating as the wall, floor, or ceiling through which the conduit or tray passes and shall not be less than a 30-minute barrier.

END OF SECTION 260539

SECTION 265100 – LIGHTING

PART 1 – GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this Section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 WORK INCLUDED

A. Contractor Furnished. The Contractor shall furnish, install and wire all lighting fixtures and the complete lighting system as shown on the drawings. The contractor shall furnish all appropriate mounting hardware as required for installation of the fixtures in the various ceiling types. The contractor shall coordinate the various ceiling types with the architect's reflected ceiling plan and construction details. All fixtures shall be the type and manufacturer specified, with UL label.

B. Typical Details, Drawings and Symbols. The Contractor shall install lighting fixtures complete with lamps and as shown on drawings. Refer to symbol drawings for additional descriptive and installation data. The Contractor shall check the location of all fixtures in relation to the structure and the work of other crafts and shall obtain approval of the Owner's representative to relocate fixtures, if required, to avoid interferences.

PART 2 – PRODUCTS

2.1 WIRING DEVICES

A. Wiring Devices. All wall switches for lighting shall be those of a single manufacturer and shall be as specified by the symbol on the drawings and as listed on the symbols drawings.

2.2 LIGHTING FIXTURES

A. All lighting fixtures shall be as specified on the fixture schedule on the drawings.

B. All outdoor fixtures shall be UL listed for wet locations unless mounted recessed in building overhangs, in such cases fixtures which are UL listed for damp locations may be permitted if specifically noted on the drawings.

C. Substitutions: The following manufacturers shall be considered pre-approved for the types of fixtures specified on the drawings when proper fixture grade is submitted. If proper grade fixture is not submitted during the shop drawing phase and submittal is rejected, fixtures must be furnished as specified on the drawings.

1. LED Troffers

- Columbia
- Lithonia
- HE Williams
- Metalux

2. Recessed LED Down Lighting

- Prescotte
- Lithonia
- HE Williams
- Portfolio

3. Emergency and Exit Lighting

- Dualite
- Lithonia
- Emergiltie
- LightAlarms
- Sure Lites

PART 3 – EXECUTION

3.1 FIXTURE OUTLETS

A. Fixture outlets shall be installed in the locations shown on the drawings. The Contractor shall study the general building plans in relation to the spaces surrounding each outlet in order that his work may fit the other work required, as well as the work of other trades. When necessary, the Contractor shall relocate outlets so that when fixtures or other fittings are installed, they will be symmetrically located according to room layout and will not interfere with other work or equipment.

3.2 LIGHTING SWITCHES

A. Lighting Switches. The Contractor shall furnish and install all lighting switches shown on the drawings. The switches shall be installed in the ungrounded lines and shall be mounted in the appropriate boxes for flush or surface mounting as specified under "Boxes". The appropriate coverplates as specified under "covers" shall be installed. Switch mounting shall be as described on the symbol drawings and as described elsewhere in this specification.

B. Local Switches. Local switches shall be located on the strike side of the doors, keeping approximately 3" away from the door trim or corner, wherever possible. Switch handles shall be set set vertically. wall receptacles shall be set with the long dimension vertical where possible. Switches suitable for use in Mullions of glass partitions shall be used where noted on plans.

C. Neutral Conductor. The neutral conductor of lighting systems shall be of the same size as the phase conductors. On three and four wire systems the load shall be divided as evenly as possible on each "outside" or phase conductor. Neutral conductors shall be identified throughout by using a white or gray (as specified in "Color Code" section) insulated wire. A green ground wire shall be run in raceway to ground all lighting fixtures, receptacles, boxes and wiring devices.



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